

AMENDMENTS TO THE CLAIMS:

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, comprising:

a circuit tape having a base material made of a dielectric film, whereon a circuit is formed; and

an adhesive layer-film for connecting said circuit tape to a semiconductor element such that the circuit tape is insulated from the semiconductor element, wherein

an elastic modulus of said adhesive layerfilm, in a range of mounting reflow temperature for mounting the semiconductor element onto a mounting substrate, is more than 1 MPa, and an elastic modulus of said adhesive film at room temperature is equal to or less than 4000 MPa.

2. (Currently Amended) A circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, as claimed in claim 1, wherein the elastic modulus of said adhesive layerfilm, in the range of 200°-250°C, is more than 1 MPa.

3. (Canceled).

4. (Currently Amended) A circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, as claimed in claim 31, wherein said adhesive film includes a three-layer structure having a porous support layer and

two adhesive layers which are respectively applied onto both sides of said porous support layer.

5. (Currently Amended) A circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, as claimed in claim 31, wherein said adhesive film includes a structure wherein an adhesive agent is impregnated into a porous support.

6. (Canceled).

7. (Currently Amended) A circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, as claimed in claim 1, wherein an elastic modulus of the adhesive layer at room temperature is lower than the elastic modulus of said adhesive layer in a temperature range of 200°-250°C.

8. (Currently Amended) A circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, as claimed in claim 1, wherein the adhesive layerfilm has a layer of a thermoplastic resin, and the thermoplastic resin has a glass transition temperature greater than 250°C.

9. (Currently Amended) A circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, as claimed in claim 1, wherein material of the adhesive layerfilm has a coefficient of moisture absorption at 85°C/85% RH for 168 hours of, at most, 3%.

10. (Currently Amended) A circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, as claimed in claim 1, wherein the circuit tape has an uneven surface with spaces between portions of the circuit, and the adhesive layer-film fills in the spaces.

11. (Currently Amended) A circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, comprising:

an elongated circuit tape having a base material made of dielectric film, whereon circuits are formed; and

at least one adhesive film each adhered continuously to said circuit tape, each adhesive film having a size less than that of the elongated circuit tape

wherein an elastic modulus of said adhesive film, in a range of mounting reflow temperature for mounting a semiconductor element onto a mounting substrate, is more than 1 MPa, and an elastic modulus of said adhesive film at room temperature is equal to or less than 4000 MPa.

12. (Canceled).

13. (Currently Amended) A circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, as claimed in claim 11, wherein an elastic modulus of said adhesive film, in the range of 200°-250°C, is more than 1 MPa.

14. (Currently Amended) A circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, as claimed in claim 11, wherein

said adhesive film includes a three-layer structure having a support layer and two adhesive layers which are respectively applied onto both sides of said support layer.

15. (Currently Amended) A circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, as claimed in claim 11, wherein said adhesive film includes a structure wherein an adhesive agent is impregnated into a porous support.

16. (Canceled).

17. (Withdrawn) A method of manufacturing a circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, comprising the steps of:

transferring an elongated circuit tape, whereon a circuit is formed, from a first reel to a second reel;

punching out adhesive film of a size smaller than that of the elongated circuit tape, wherein an elastic modulus of said adhesive film, in a range of mounting reflow temperature for mounting a semiconductor element having said adhesive film onto a mounting substrate, is more than 1 MPa; and

adhering continuously the punched-out adhesive film to said circuit tape, as the circuit tape is transferred from the first reel to the second reel, concurrently with the punching.

18. (Withdrawn) A method of manufacturing circuit tape with an adhesive layerfilm, adapted to be used in ball grid array semiconductor devices, as claimed in

claim 17, wherein said punched-out adhesive film is punched out from an elongated adhesive film transferred from a first reel to a second reel.

19. (Currently Amended) Adhesive film adapted to be used in ball grid array semiconductor devices, which is for adhering a semiconductor element to circuit tape, having an elastic modulus, in a range of mounting reflow temperature for mounting the semiconductor element onto a mounting substrate, of more than 1 Mpa, and an elastic modulus of said adhesive film at room temperature is equal to or less than 4000 MPa.

20. (Previously Presented) Adhesive film adapted to be used in ball grid array semiconductor devices as claimed in claim 19, wherein said mounting reflow temperature is in a range of 200°C-250°C, said elastic modulus of the adhesive film, in the range of 200°C-250°C, being more than 1 MPa.

21. (Canceled).

22. (Previously Presented) Adhesive film adapted to be used in ball grid array semiconductor devices as claimed in claim 19, wherein said adhesive film includes a three-layer structure having a support layer and two adhesive agent layers which are applied respectively onto both sides of said support layer.

23. (Previously Presented) Adhesive film adapted to be used in ball grid array semiconductor devices as claimed in claim 19, wherein said adhesive film has a structure wherein an adhesive agent is impregnated into a porous support.

24. (Currently Amended) A circuit tape with an adhesive layerfilm, for semiconductor devices, comprising:

a circuit tape having a base material made of a dielectric film, whereon a circuit is formed; and

an adhesive layer-film for connecting said circuit tape to a semiconductor element such that the circuit tape is insulated from the semiconductor element, wherein

said adhesive layer-film includes a thermosetting resin closest to the circuit tape and a thermoplastic resin to be closest to the semiconductor element, and

an elastic modulus of said adhesive layerfilm, in a range of mounting reflow temperature for mounting the semiconductor element onto a mounting substrate, is more than 1 MPa.

25. (Currently Amended) The circuit tape with an adhesive layer-film as claimed in claim 24, adapted to be used in ball grid array semiconductor devices.

26. (Currently Amended) The circuit tape with an adhesive layer-film as claimed in claim 1, wherein said circuit tape includes pads for electrical connection thereto by a ball grid array connection.

27. (Currently Amended) The circuit tape with an adhesive layer-film as claimed in claim 1, wherein said elastic modulus of said adhesive layer-film is at most 2000 MPa in a range of -55°C to 150°C.

28. (Currently Amended) The circuit tape with an adhesive layer-film as claimed in claim 11, wherein said circuit tape includes pads for electrical connection thereto by a ball grid array connection.

29. (Currently Amended) The circuit tape with an adhesive layer-film as claimed in claim 11, wherein said elastic modulus of said adhesive layer-film is at most 2000 MPa in a range of -55°C to 150°C.

30. (Withdrawn) A method of manufacturing circuit tape with an adhesive layer-film as claimed in claim 17, wherein said circuit tape includes pads for electrical connection thereto by a ball grid array connection.

31. (Currently Amended) A method of manufacturing circuit tape with an adhesive layer-film as claimed in claim 17, wherein said elastic modulus of said adhesive layer-film is at most 2000 MPa in a range of -55°C to 150°C.

32. (Previously Presented) Adhesive film adapted to be used in ball grid array semiconductor devices as claimed in claim 19, wherein said circuit tape includes pads for electrical connection thereto by a ball grid array connection.

33. (Currently Amended) Adhesive film adapted to be used in ball grid array semiconductor devices as claimed in claim 19, wherein said elastic modulus of said adhesive layer-film is at most 2000 MPa in a range of -55°C to 150°C.

34 (New) The circuit tape with an adhesive film as claimed in claim 24,
wherein an elastic modulus of said adhesive film, at room temperature, is equal to or
less than 4000 MPa.

35. (New) The circuit tape with an adhesive film as claimed in claim 24,
wherein said elastic modulus of said adhesive film is at most 2000 MPa in a range of
-55°C to 150°C.